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Applicant's Name: Kimberly-Clark Worldwide, Inc.

Serial No. (Control No.): 09/945,239 Examiner: Boyd

Filing Date: August 31, 2001 Art Unit: 1714

Application Title: HOT-MELT ADHESIVE BASED ON BLEND OF AMORPHOUS
AND CRYSTALLINE POLYMERS FOR MULTILAYER BONDING

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Peiguang Zhou, et al. Art Unit 1714
Serial No. 09/945,239
Filed August 31, 2001
Confirmation No. 1306
For HOT-MELT ADHESIVE BASED ON BLEND OF AMORPHOUS AND
CRYSTALLINE POLYMERS FOR MULTILAYER BONDING
Examiner Jennifer A. Boyd

APPEAL BRIEF

Christopher M. Goff, Reg. No. 41,785
SENNIGER, POWERS
One Metropolitan Square, 16th Floor
St. Louis, Missouri 63102
(314) 231-5400

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Examiner Jennifer A. Boyd

APPEAL BRIEF

This is an appeal from the final rejection of the claims of the above-identified application made in the Office action dated November 10, 2005. A Notice of Appeal was faxed on December 7, 2005.

I. REAL PARTY IN INTEREST

The real party in interest in connection with the present appeal is Kimberly-Clark Worldwide, Inc. of 401 N. Lake Street, Neenah, Wisconsin 54957-0349, a corporation of the state of Delaware, owner of a 100 percent interest in the pending application.

II. RELATED APPEALS AND INTERFERENCES

Appellants are aware of two pending appeals, which may be related to, directly affect or be directly affected by, or have a bearing on, the Board's decision in the pending appeal. Specifically, there are pending appeals in the related cases of U.S. Application Nos. 10/260,951 (filed on September 30, 2002) and 10/266,440 (filed on October 8, 2002).

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III. STATUS OF CLAIMS

Claims 24-33 and 70-82 are currently pending in the application. A copy of the pending claims appears in the Claims Appendix of this Brief.

Claims 24-33 and 70-82 stand rejected under 35 U.S.C. §103(a). The rejection of claims 24-33 and 70-82 under 35 U.S.C. §103(a) is being appealed.

IV. STATUS OF AMENDMENTS

No amendments have been filed after the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary correlates claim elements to specific embodiments described in the application specification, but does not in any manner limit claim interpretation. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this appeal.

People rely on disposable absorbent articles to make their lives easier. Disposable absorbent articles, such as adult incontinence articles and diapers, are generally manufactured by adhesively bonding several components together to form a laminated structure. In many instances, a hot-melt adhesive, i.e., a polymeric formulation that is heated to substantially liquefy the formulation prior to application to one or both materials when making a laminate, is used in making a laminated structure. While such formulations generally work, they can be costly and their performance properties, such as bond strength, can be improved. (see Specification at page 3, lines 3-7).

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Additionally, the propensity of hot-melt adhesives to migrate from the laminated structure and onto the surfaces of ultrasonic-bonding equipment used to ultrasonically bond the components, can be reduced or eliminated. (see Specification at page 3, lines 9-12).

The present invention thus relates to laminated substrates and disposable absorbent articles manufactured using an adhesive composition having better performance characteristics and/or costing less than conventional hot-melt adhesives. In one embodiment, the absorbent article comprises a laminated structure comprising two layers. At least a portion of the first layer is attached to at least a portion of the second layer using an adhesive composition. (see Specification p. 10, lines 6-13).

The adhesive composition for use in bonding the first and second layers of the laminated substrate comprises both crystalline and amorphous polymers (Specification p. 4, lines 2-5). In one embodiment, the adhesive composition comprises an atactic polymer having a degree of crystallinity of about 20% or less and a number-average molecular weight of from about 1000 to about 300,000 and an isotactic polymer having a degree of crystallinity of about 40% or more and a number-average molecular weight of from about 10,000 to about 100,000. The adhesive composition is hot-melt processable at a temperature of about 450 degrees Fahrenheit or less. (see Specification p. 7, line 14 through p. 8, line 3).

As noted above, the adhesive composition has improved performance characteristics as compared to the performance characteristics of conventional hot-melt adhesives. For example, in one embodiment, a laminated structure manufactured using an adhesive composition of the present invention has a

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static-peel-failure time, which is a method of determining bond strength, of about 30 hours, while laminated substrates made with various conventional hot-melt adhesives failed after about 4 hours. (see Specification at p. 7, lines 6-13).

Along with providing improved performance properties, the adhesive composition costs less than a conventional hot-melt adhesive. Generally, conventional hot-melt adhesives are formulated by combining several components, including a polymer or polymers for cohesive strength, resins, tackifiers, viscosity modifiers, and other additives. In some embodiments of the present invention, the atactic and isotactic polymers alone provide improved performance characteristics compared to conventional hot-melt adhesives.

In one specific embodiment, the present invention is directed to a laminated substrate comprising a first layer and a second layer, wherein at least a portion of the first layer is attached to at least a portion of the second layer using an adhesive composition. The first layer is a neck-bonded laminate. The adhesive composition comprises an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight between about 1000 and about 300,000, and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight between about 3000 and about 200,000. (see Specification at p. 7, line 14 through p. 8, line 3, p. 11, lines 15-19, and p. 16, lines 4-11).

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VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The claims 24-33 and 70-82 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tanzer (WO 01/15646) in view of Hall et al. (U.S. 3,370,106).

VII. ARGUMENT

Claims 24-33 and 70-82 are patentable under 35 U.S.C. §103(a) over Tanzer (WO 01/15646) in view of Hall et al. (U.S. 3,370,106).

Claim 24 is directed to a laminated structure comprising at least a portion of a first layer attached to at least a portion of a second layer using an adhesive composition. The adhesive composition comprises an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight between about 1,000 and about 300,000, and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight between about 3,000 and about 200,000. The first layer is a neck-bonded laminate substrate.

Tanzer discloses an absorbent composite comprising a selectively stretchable liquid permeable first substrate layer, a selectively stretchable second substrate layer and pockets of superabsorbent material formed between the first layer and second layer.¹ In one embodiment, the layers may be a neck-bonded laminate of a necked, inelastic nonwoven filament web to an elastic film.² The pockets are defined by attachment means

¹Tanzer specification at page 6, lines 1-5.

²See Tanzer specification at page 3, lines 17-18.

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which serves to join the first and second layers to form a laminate. Suitable attachment means include water sensitive adhesives.³ A secondary attachment means can include water insensitive adhesives.⁴

As noted by the Office, Tanzer fails to teach the adhesive composition required in claim 24, which comprises an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight between about 1,000 and about 300,000, and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight between about 3,000 and about 200,000. In an attempt to find each and every element of claim 24 as required by the M.P.E.P. for a determination of *prima facie* obviousness, the Office cites the Hall et al. reference for combination with Tanzer.

Hall et al. disclose a hot-melt adhesive suitable for bonding two materials together such as a corrugated paper medium and a 50-pound kraft paper facer sheet to produce corrugated paper board. The hot-melt adhesive is also suitable for the fabrication of paper cartons.⁵ The adhesive composition comprises 60 to 95 weight percent atactic polypropylene and 5 to

³See Tanzer specification at page 6, lines 15-20.

⁴See Tanzer specification at page 6, lines 26-27.

⁵In column 1, lines 36-38, Hall et al. disclose that the hot-melt adhesive composition may be used for bonding wood, paper, plastics, textiles, and other materials. As discussed more fully below, this reference fails to suggest or disclose that the disclosed adhesive composition could be used to bond a portion of a first layer to a portion of a second layer, wherein the first layer is a neck-bonded laminate substrate as required by claim 24.

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40 weight percent polyethylene or isotactic polypropylene. The atactic polypropylene has a molecular weight of 15,000 to 60,000 and the isotactic polypropylene has a molecular weight of up to about 500,000, and preferably from 85,000 to 95,000.

In order for the Office to show a *prima facie* case of obviousness, M.P.E.P. §2143 requires that the Office must meet three criteria: (1) the prior art reference must teach or suggest all of the claim limitations; (2) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references, and (3) there must be some reasonable expectation of success. The Office has clearly failed to meet its burden under (2) above, as there is no motivation or suggestion to combine the Tanzer and Hall et al. references to arrive at Applicants' claim 24.

As noted in M.P.E.P. §2142, in establishing obviousness, the Office must show references that teach all of the claimed limitations along with some motivation or suggestion, either in the references themselves or in knowledge generally available to one skilled in the art, to combine the references and arrive at the claimed subject matter.⁶ The mere fact that the references can be combined to arrive at the claimed subject matter does not render the resultant combination obvious, unless the prior art also suggests the desirability of the combination. In re Mill, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). A close reading

⁶As further set forth in M.P.E.P. §2143.01, obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the reference itself, or in the knowledge generally available to one of ordinary skill in the art.

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of the cited references clearly indicates that one skilled in the art would not have been so motivated and, without Applicants' disclosure as a blueprint (which the Office had the benefit of utilizing), such a combination of the Tanzer and Hall et al. references would not have been made.⁷

The Office asserts that Hall et al. provide sufficient motivation to use the adhesive composition of Hall et al. in the absorbent composite of Tanzer due to the desire to produce a composite containing a low-cost adhesive with high performance properties. With all due respect, Applicants submit that there is not a convincing line of reasoning as to why the combination of these references would have been obvious. Specifically, why would one skilled in the art pick Hall et al.'s composition over all of the other low-cost high performing compositions?

Tanzer simply teaches that neck-bonded laminates can be bonded adhesively to another material with a hot melt adhesive; and even provides one commercially acceptable adhesive. The Tanzer reference fails to provide a reason why one skilled in the art would choose one adhesive over the other. The Hall et al. reference is directed to a hot-melt adhesive suitable for bonding two materials together such as a corrugated paper medium

⁷M.P.E.P. §2142 further provides that in order to reach a proper determination under 35 U.S.C. §103(a), the Examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. Knowledge of Applicants' disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences." The tendency to resort to "hindsight" based upon Applicants' disclosure is often difficult to avoid due to the very nature of the examination process. However, as stated by the Federal Circuit, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. Grain Processing Corp. v. American-Maize-Products, Co., 840 F.2d 902, 904 (Fed. Cir. 1988).

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and a 50-pound kraft paper facer sheet to produce corrugated paper board. While the adhesive of Hall et al. can also be used for bonding wood, paper, plastics, textiles, and other materials, why would one skilled in the art look to the Hall et al. adhesive over any other hot melt adhesive for bonding the necked, nonwoven layer and bottom layer of the neck-bonded laminate of Tanzer? No where in Hall et al. is it disclosed to use the adhesive composition for neck-bonded laminate substrates.

As stated in Application of Kuderna, when approached with the issue of patentability, it must be viewed in terms of "what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all of the relevant teachings in the art, not in view of first one and then another of the isolated teachings in the art." (*emphasis added*)⁸ As defined in the M.P.E.P., to be relevant or analogous art, "the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned."⁹

⁸ 426 F.2d 385, 389 (C.C.P.A. 1970). Additionally, in In re Gorman, the Federal Circuit ruled that when "determining whether a new combination of known elements would have been obvious to one of ordinary skill... the test is whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention." 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991); See also In re Young, 927 F.2d 588, 591, 18 U.S.P.Q.2d 1089, 1091 (Fed. Cir. 1991); M.P.E.P. §2143.01 ("The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts.") This requires that all hot-melt adhesive compositions be considered.

⁹ M.P.E.P. §2141.01(a). Additionally, a reference is reasonably pertinent if, even though it may be in a different

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Specifically, in Kuderna, the Office rejected Kuderna's compound by picking one similar compound from more than fifty compounds tested and mentioned specifically in one of the prior art references. The court went on to rule that there was no reason for one skilled in the art to emphasize that one isolated teaching, and as such, Kuderna's claimed compound was not obvious in view of the cited references.

Applicants' case is similar as there is no reason for one skilled in the art at the time of the invention to emphasize the adhesive of Hall et al. over any of the other hot-melt adhesives available in the art.

With all due respect, it appears that the Office has used impermissible hindsight analysis and reconstruction when combining the Tanzer reference with the Hall et al. reference. Notably, it would be clear to one skilled in the art reading Tanzer that a low-cost adhesive with high performance properties be used to bond the substrates described therein. There are, however, a myriad of low-cost, high performance adhesives in the art, many of which are used in diapers and other absorbent substrate applications. Hall et al. do not even mention such use. What is important is that there is no motivation or suggestion to use the composition of Hall et al. over any of the other enormous number of low-cost adhesives described in the art, which have high performance properties.

Moreover, Applicants note that in the previous Office action dated August 13, 2003, claims 70-72 were rejected under 35 U.S.C. §103(a) as being unpatentable over the same Tanzer and Hall et al. references in view of a third reference, the Wang

field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention considering his problem. In re Clay, 966 F.2d 656, 659 (Fed. Cir. 1992).

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reference (U.S. 6,329,468). As noted above, all of the previously set forth rejections have been withdrawn. Claim 70, at the time of the response to the August 13, 2003 Office action (Amendment B filed November 13, 2003), was similar to the currently pending claim 24 and further required the second layer to be a neck-bonded laminate substrate. As such, currently pending claim 24 is patentable over the Tanzer and Hall et al. references for the same reasons that claim 70 was patentable over the Tanzer and Hall et al. references in view of the Wang reference set forth in Amendment B filed November 11, 2003. As stated in the final Office action dated November 10, 2005, the Office considers Wang to no longer be relevant as it was not relied upon in the current rejection. Applicants respectfully disagree, as noted above, obviousness should be determined in view of all of the teachings in the art. As Wang is in the field of hot melt adhesives and further discusses the use of atactic and isotactic polymers in adhesive compositions, Wang is considered analogous art and must be considered, despite not being expressly cited in the current rejection.

In Arkie Lures, Inc. v. Gene Larew Tackle, Inc., the Federal Circuit held that Larew's invention, which was directed to plastic salty fish bait, was not obvious as both the prior art and experts in the field strongly cautioned against the use of salt on fishing bait.¹⁰ Specifically, the court ruled that

¹⁰ 119 F.3d 953 (Fed. Cir. 1997). Specifically, Larew's invention was directed to a plastic salty lure for fishing and among the prior art cited by the Office against Larew was a book disclosing salted pork rind as bait, a patent describing a fishing fly formed from squirrel hair with yeast and salt baked in, a patent directed to a plastic lure containing an organic fish attractant, and a patent directed to lure additives having the flavor or odor of natural bait. In determining that Larew's invention was not obvious, the Federal Circuit looked both at the prior art cited and to outside expert testimony.

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the question was not whether salt 'could be used,'... but whether it was obvious [to one of ordinary skill] to do so in light of all relevant factors (*emphasis added*)."¹¹

A close reading of the Wang reference, which cannot simply be discounted by the Office, clearly indicates that one skilled in the art would be guided away from combining the Tanzer and Hall et al. references to arrive at Applicants' invention. As defined by the Federal Circuit, a reference teaches away if "one of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the Applicant took."¹² Specifically, Wang teaches that the use of atactic and isotactic polymers in adhesive compositions for use in disposable nonwoven applications has many disadvantages. This teaching is highly relevant to the issue of whether one of ordinary skill, upon reading Wang, would be led to use the adhesive of Hall et al. in the absorbent composites of Tanzer. As such, the teaching of Wang must be considered by the Office.

Wang teaches the use of a single block blend polymeric material (referred to as a flexible polyolefin) which has segments or blocks of regular isotactic structure that are interspersed by segments or blocks of atactic structure, along with at least two other components. Noting that the flexible polyolefin has a "unique" molecular structure, Wang notes numerous improvements as compared to conventional atactic and

¹¹ *Id.* at 957.

¹² Micro Chemical, Inc. v. Great Plains Chemical Co., Inc., 103 F.3d 1538, 1546 (Fed. Cir. 1997). Additionally, the Federal Circuit in Micro Chemical decided that the "long-felt need in the face of prior art later asserted to lead to a solution tends to negate the proposition that the combination of such prior art would have been obvious." *Id.* at 1547.

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isotactic polymers (which are disclosed by Hall et al. and specifically relied upon by the Office). Additionally, and critically, Wang discusses, in numerous paragraphs in columns three and four, the shortcomings and limitations of hot-melt adhesives comprising atactic and isotactic polymers in place of the flexible polyolefins. For example, in column 3, lines 37-47 Wang states that hot-melt adhesives comprising atactic polypropylene generally have poor cohesive strength, poor heat resistance, low elevated temperature peel and low shear values. Significantly, Wang further states:

"[Atactic polypropylenes] have not found much use in disposable nonwoven applications where a combination of high bond strength at very low coating weight and easy processability by spray techniques mentioned above is required. [Atactic polypropylene] based adhesives usually lack such capability." Column 3 lines 42-47.

Further, at column 4 lines 13-19 Wang states:

"As noted above, [atactic polypropylenes] differ significantly from [flexible polyolefins] used in the present invention in both molecular structure, average molecular weight, physical and mechanical properties. These prior art [atactic polypropylene] adhesives are formulated for applications other than for disposable nonwovens products and usually lack sprayability."
Emphasis added.

Additionally, at column 4 lines 55-60 Wang states:

"The compositions of the present invention have overcome the shortcomings of the prior art amorphous poly-alpha-olefins and block copolymer based adhesives and provide excellent heat stability, improved cohesive strength, low

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viscosity, and good adhesion to a variety of substrates and good processability with conventional coating equipment."

One skilled in the art and reading the Wang reference would actually be taught or guided away from utilizing the adhesive composition set forth in claim 24 of the present invention and from looking at any reference that suggests or teaches a combination of atactic polypropylene and isotactic polypropylene as Hall et al. do.⁷ Wang clearly sets forth the shortcomings of hot-melt adhesives comprising isotactic polypropylene and atactic polypropylene and specifically states that such compositions are formulated for applications other than for disposable nonwoven products because such compositions lack basic characteristics required for suitable use, such as thermal stability and cohesive strength. Because Wang teaches squarely away from the teachings in Hall et al. of a hot-melt adhesive comprising atactic polypropylene, one skilled in the art would not, and could not, have been properly motivated to look at the Hall et al. reference after reading the Wang reference.

Moreover, in the final Office action dated November 10, 2005, the Office states that Wang does not indicate that the specific adhesive of Hall et al. would have the above shortcomings, and thus Hall et al. cannot be determined to be unsuitable for use in the products of Tanzer. While Wang does not specifically discuss the adhesive of Hall et al., Wang does indicate that the combination of atactic polymers and isotactic polymers in general is not considered useful in disposable

⁷Applicants note that a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983).

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absorbent products and thus, one skilled in the art, reading Wang, would not be led to use the atactic polymer/isotactic polymer adhesive of Hall et al. in Tanzer's absorbent composites.

There is simply no motivation to combine the Tanzer and Hall et al. references to arrive at the instant claim 24, and claim 24 cannot be said to be obvious in view of the cited references.

Claims 25-33 are dependent upon claim 24 and are patentable for the same reasons as claim 24 set forth above, as well as for the additional elements they require.

Claim 70 is similar to claim 24 and is directed to a laminated structure comprising a first neck-bonded laminate substrate and a second neck-bonded laminate substrate, wherein the first neck-bonded laminate substrate is bonded to the second neck-bonded laminate substrate with an adhesive composition. The adhesive composition comprises an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of from about 1,000 to about 300,000 and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000.

Both Tanzer and Hall et al. are discussed above.

As stated above, Tanzer fails to disclose an adhesive composition comprising an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of from about 1,000 to about 300,000 and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000. Further, as stated above, one skilled in the art would not and could not find motivation to combine

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the adhesive composition of Hall et al. with the substrates of Tanzer to arrive at instant claim 70. As such, claim 70 is not obvious over the cited references.

Claims 71-82 are dependent upon claim 70 and are patentable for the same reasons as claim 70 set forth above, as well as for the additional elements they require.

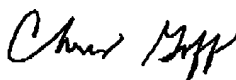
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VIII. Conclusion

A *prima facie* case of obviousness has not been established pursuant to 35 U.S.C. § 103, because the Office has failed to show sufficient motivation for the references to be combined to arrive at each and every element of claims 24-33 and 70-82. For this reason, and for those more fully stated above, Appellants respectfully request the Office's rejections be reversed and claims 24-33 and 70-82 be allowed.

The Commissioner is hereby authorized to charge \$500 for the appeal brief and any additional fees which may be required to Deposit Account No. 19-1345.

Respectfully submitted,



Christopher M. Goff, Reg. No. 41,785
SENNIGER, POWERS
One Metropolitan Square, 16th Floor
St. Louis, Missouri 63102
(314) 231-5400

CMG/JMB

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CLAIMS APPENDIX

Claims 1-23 (Cancelled).

24. (Previously Presented) A laminated structure comprising at least a portion of a first layer attached to at least a portion of a second layer using an adhesive composition, the adhesive composition comprising an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight between about 1,000 and about 300,000, and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight between about 3,000 and about 200,000, wherein the first layer is a neck-bonded laminate substrate.

25. (Original) The laminated structure of Claim 24, wherein the laminated structure has a static-peel-failure time of at least about 1 hour.

26. (Original) The laminated structure of Claim 24, wherein the laminated structure has a static-peel-failure time of at least about 8 hours.

27. (Original) The laminated structure of Claim 24,

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wherein the laminated structure has a static-peel-failure time of at least about 24 hours.

28. (Original) The laminated structure of Claim 24, wherein the laminated structure has a relative accretion value of less than 1.

29. (Original) The laminated structure of Claim 24, wherein the laminated structure has a relative accretion value of less than 0.5.

30. (Original) The laminated structure of Claim 24, wherein the laminated structure has a relative accretion value of less than 0.2.

31. (Previously Presented) The laminated structure of Claim 24, wherein the first and second layers comprise a single material, said single material being folded over and adhesively bonded to itself.

32. (Previously Presented) The laminated structure of Claim 24, wherein the second layer is selected from the

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group consisting of: nonwoven material, woven material, film, and an elasticized component.

33. (Previously Presented) The laminated structure of Claim 24, wherein the second layer comprises at least one of the group consisting of cellulosic material, thermoplastic material, and combinations thereof.

Claims 34-69 (Cancelled).

70. (Previously Presented) A laminated structure comprising a first neck-bonded laminate substrate and a second neck-bonded laminate substrate, said first neck-bonded laminate substrate being bonded to said second neck-bonded laminate substrate with an adhesive composition comprising an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of from about 1,000 to about 300,000 and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000.

71. (Previously Presented) The laminated structure as set forth in claim 70 wherein at least one of said first neck-bonded

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laminate substrate and said second neck-bonded laminate substrate comprises a polyethylene layer sandwiched between two spunbond polypropylene layers.

72. (Previously Presented) The laminated structure as set forth in claim 70 wherein one or both of said first neck-bonded laminate substrate and said second necked-bonded laminated substrate comprises a material selected from the group consisting of a nonwoven material, a woven material, a film, an elasticized component, a cellulosic material, a thermoplastic material, a polypropylene spunbonded material, or combinations thereof.

73. (Previously Presented) The laminated structure as set forth in claim 70 wherein said adhesive composition is in liquefied form.

74. (Previously Presented) The laminated structure as set forth in claim 70 wherein said adhesive composition is hot-melt processable at a temperature of about 450°F or less.

75. (Previously Presented) The laminated structure as set forth in claim 70 wherein the degree of crystallinity of

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said atactic polymer is less than about 15%.

76. (Previously Presented) The laminated structure as set forth in claim 70 wherein the degree of crystallinity of said isotactic polymer is at least about 60%.

77. (Previously Presented) The laminated structure as set forth in claim 70 wherein said adhesive composition comprises between about 50 and about 90 weight percent of the atactic polymer and between about 5 and about 50 weight percent of the isotactic polymer.

78. (Previously Presented) The laminated structure as set forth in claim 70 wherein said atactic polymer is selected from the group consisting of low density polyethylene, atactic polystyrene, atactic polybutene, amorphous polyolefin copolymer and combinations thereof.

79. (Previously Presented) The laminated structure as set forth in claim 70 wherein said atactic polymer comprises atactic polypropylene.

80. (Previously Presented) The laminated structure as

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set forth in claim 70 wherein said isotactic polymer is selected from the group consisting of high density polyethylene, isotactic polystyrene, isotactic polybutene and combinations thereof.

81. (Previously Presented) The laminated structure as set forth in claim 70 wherein said isotactic polymer comprises isotactic polypropylene.

82. (Previously Presented) The laminated structure as set forth in claim 70 wherein at least one of said first neck-bonded laminate substrate and said second neck-bonded laminate substrate is a stretch-bonded laminate composed of an elongated elastic web or elongated elastomeric strands bonded between two spunbonded layers.

Claims 83-107 (Cancelled).

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EVIDENCE APPENDIX

Applicants rely on the Wang reference (U.S. 6,329,468) to support the above arguments. Wang was cited in a previous Office action (mailed August 13, 2003) received in the instant application. Applicants enclose herewith copies of the Wang reference and the August 13, 2003 Office action.

RELATED PROCEEDINGS APPENDIX

None.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CITIFICATION NO.
09/945,239	08/31/2001 ✓	Peiguang Zhou	KCC-16,163 KCC 4921	1306 12
7590 08/13/2003 Senniger, Powers, Leavitt & Roedel One Metropolitan Square, 16th Floor St. Louis, MO 63102				
EXAMINER BOYD, JENNIFER A				
ART UNIT		PAPER NUMBER		
1771				

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Blm

Office Action Summary

Application No.

09/945,239

Applicant(s)

ZHOU ET AL.

Examiner

Jennifer A Boyd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.135(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-107 is/are pending in the application.
- 4a) Of the above claim(s) 1 - 23; 34 - 69 and 83 - 107 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24 - 33 and 70 - 82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,9,11. 6) ☐ Other: _____

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 24 – 33 and 70 - 82 in Paper No. 10 is acknowledged. Claims of Group I (1 – 23, 35 – 38 and 40 – 57), Group III (58 – 69), Group IV (83 – 107) and Group V (34 and 39) have been withdrawn from consideration.

Claim Objections

2. Claim 24 is objected to because of the following informalities: Claim 24 is dependent on claim 1, which has been withdrawn from consideration. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 31 is rendered indefinite because it is unclear what "part of a single substrate" means. Does the Applicant intend that both layers – first and second – are each comprise only one layer? For the purpose of examination at this time, the Examiner will assume that the Applicant means that the first and second layers comprise only one layer each.

Claim Rejections - 35 USC § 102

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6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 24 and 31 -- 33 are rejected under 35 U.S.C. 102(a) as being anticipated by Tanzer (WO 01/15646).

Tanzer is directed to an absorbent article having superabsorbent in discrete pockets on a stretchable substrate (Title).

As to claim 24, Tanzer teaches an *absorbent composite 44* comprising a selectively stretchable liquid permeable *first substrate layer 46* and a selectively stretchable *second substrate layer 48* (page 6, lines 1 – 5 and Figure 2). The *layers 46* and *48* can be secured by a water insensitive attachment means (page 6, lines 25 – 28). It should be noted that the adhesive composition of claim 1 that is referred to in claim 24 is not given any weight since it is a withdrawn claim.

As to claims 31 - 33, Tanzer teaches that a *neckable web 112* may be used for either the *first substrate layer 46* or the *second substrate layer 48* or both (page 9, lines 6 – 10). The *neckable web 112* may be a porous nonwoven material, such as a spunbonded web, meltblown web or bonded carded web (page 9, lines 23 – 25). The *neckable material 112* may be made of fiber forming polymers, such as polyolefins (page 9, lines 24 – 26), which are known in the art to be thermoplastic materials.

Claim Rejections - 35 USC §102/ 103

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8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 25 – 30 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tanzer (WO 01/15646).

Although Tanzer does not explicitly teach the claimed static-peel-failure time of at least one hour as required by claim 25, static-peel-failure time of at least 8 hours as required by claim 26, static-peel-failure time of at least 24 hours as required by claim 27, relative accretion value of less than 1 as required by claim 28, relative accretion value of less than 0.5 as required by claim 29 and relative accretion value of less than 0.2 as required by claim 30, it is reasonable to presume that static-peel-failure time of at least one hour as required by claim 25, static-peel-failure time of at least 8 hours as required by claim 26, static-peel-failure time of at least 24 hours as required by claim 27, relative accretion value of less than 1 as required by claim 28, relative accretion value of less than 0.5 as required by claim 29 and relative accretion value of less than 0.2 as required by claim 30 is inherent to Tanzer. Support for said presumption is found in the use of like materials (i.e. a first layer attached to a second layer using an adhesive) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of static-peel-failure time of at least one hour as required by claim 25, static-peel-failure time of at least 8 hours as required by claim 26, static-peel-failure time of at least 24 hours as required by claim 27, relative accretion value of less than 1 as required by claim 28, relative accretion value of less than 0.5 as

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required by claim 29 and relative accretion value of less than 0.2 as required by claim 30 would obviously have been present once the Tanzer product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977) as to providing of this rejection made above under 35 USC 102.

10. Claims 70 – 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanzer (WO 01/15646) in view of Wang (US 6,329,468) and Hall (US 3,370,106).

As to claim 70, Tanzer teaches an *absorbent composite 44* comprising a selectively stretchable liquid permeable *first substrate layer 46* and a selectively stretchable *second substrate layer 48* (page 6, lines 1 – 5 and Figure 2). The *layers 46 and 48* can be secured by a water insensitive attachment means (page 6, lines 25 – 28). Tanzer teaches that a *neckable web 112* may be used for either the *first substrate layer 46* or the *second substrate layer 48* or both (page 9, lines 6 – 10). The *neckable material 112* may be a multilayer material (page 10, lines 1 – 5), therefore, can be considered a laminate.

Tanzer fails to teach that the water insensitive attachment means is an adhesive composition comprising an atactic polymer having a degree of crystallinity of less than about 20% and a number-average molecular weight of from about 1,000 to about 300,000 and an isotactic polymer having a degree of crystallinity of at least about 40% and a number-average molecular weight of from about 3,000 to about 200,000 as required by claim 70.

Wang is directed to a hot melt adhesive based on semicrystalline flexible polyolefins (Title) used for non-woven laminates for diapers and feminine care products (column 13, lines 20 – 25 and column 14, lines 35 – 40).

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Wang discloses a hot-melt adhesive comprising flexible polyolefin polymers (FPO), which is essentially a block copolymer of atactic and isotactic polypropylene (column 2, lines 66 - column 3, line 10). The hot-melt adhesive is commercially available from the Huntsman Corporation under the trade name of RexFlex. Wang discloses some commonly known properties of isotactic and atactic polypropylene. For example, Wang teaches conventional crystalline polypropylene are high molecular weight polymers with a predominantly isotactic chain structure (column 2, lines 18-20) and, that due to the highly ordered crystalline nature of isotactic polypropylene, the degree of crystallinity is usually greater than 50%, as required by claim 76, with a melt flow rate ranging from .5-200 g/min (column 2, lines 30 - 35 and lines 40 - 42). On the other hand, amorphous or atactic polypropylene usually has a very low degree of crystallinity, around 4% or less as required by claim 75, with a heat of fusion of less than 10 J/g (the crystallinity is calculated by dividing the heat of fusion of the sample divided by the heat of fusion of the 100% crystalline polypropylene which is assumed to be 209 J/g - Johnson et al (US 2002/0010265, page 1, section 0012)). In addition, low molecular weight atactic or amorphous polypropylene is generally soft and has a melt flow rate of 2000g/10 min. RexFlex is known in the art as a relatively flexible polypropylene polymer that is at least about 30% atactic. It is preferred, however, that the majority of the polymer structure is crystalline. Examples of such relatively flexible polypropylene polymers include: RexFlex FPO W101 (commercially available from Huntsman Chemical Corporation (Kollma et al., US 2002/0098353 A1, page 3, sections 0028 and 0029)).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the hot-melt adhesive composition of Wang in the absorbent composite of Tanzer motivated by the desire to produce a high-performance and low-cost hot-melt adhesive.

Tanzer in view of Wang fails to teach the molecular weights of the components of the adhesive composition as required by claim 70.

Hall, Jr. teaches a hot-melt adhesive blend comprising isotactic and atactic polypropylene (column 1, lines 46 - 50). The hot-melt adhesive composition is suitable to bond wood, paper, and textiles (column 1, lines, 35-36). The hot-melt adhesive composition preferably comprises a solid atactic polypropylene (essentially non-crystalline) having a molecular weight in the range of 15,000-60,000 and represents from 75 - 95 percent of the composition (column 1, lines 57 - 69 and column 2, lines 40 - 45). The isotactic (essentially crystalline) polypropylene component has a molecular weight ranging from 85,000 to 95,000 and represents from 5 - 25 percent of the composition (column 2, lines 19 - 25 and lines 39 - 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the hot-melt adhesive composition of Hall, Jr. et al. as the hot-melt composition in the composite of Tanzer in view of Wang motivated by the desire to produce a hot-melt adhesive with excellent properties specifically for use in textile bonding applications.

As to claim 71, Tanzer teaches that the *neckable web* 112 can comprise a first layer of spunbonded polypropylene, a middle layer of meltblown polypropylene and a second layer of spunbonded polypropylene (page 10, lines 1 - 10). It should be noted that Tanzer teaches the use

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of polypropylene as the middle layer, but does not specifically teach the use of polyethylene. However, polypropylene and polyethylene are both polyolefins and it would be obvious to interchange the two polyolefins because they are similar in properties and commonly used for the same products. It would have been obvious to one having ordinary skill in the art at the time the invention was made to interchange polyethylene for polypropylene in the middle layer of the laminate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. *In re Leshin*, 125 USPQ 416.

As to claim 72, Tanzer teaches that either or both *layers 46 and 48* can comprise a *neckable web 112*, which may be a porous nonwoven material such as a spunbonded web

11. Claims 70 and 73 – 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 6,329,468) and Hall, Jr. (US 3,370,106).

Wang is directed to a hot melt adhesive based on semicrystalline flexible polyolefins (Title) used for non-woven laminates for diapers and feminine care products (column 13, lines 20 – 25 and column 14, lines 35 – 40).

Wang teaches bonding three elastic strands stretched to 300% elastic (Lycra 740) between two layers of polypropylene non-woven fabric layers (column 11, lines, 15 - 25) as required by claims 70 and 82. The adhesive may be sprayed, meltblown, or applied as a bead (column 13, lines 54-56). Additionally, Wang discloses a hot-melt adhesive comprising flexible polyolefin polymers (FPO), which is essentially a block copolymer of atactic and isotactic polypropylene (column 2, lines 66 - column 3, line 10) as required by claims 79 and 81. It

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should be noted that Wang teaches the use of atactic polypropylene and isotactic polypropylene in the adhesive composition, but does not specifically teach the use of polyethylene. However, polypropylene and polyethylene are both polyolefins and it would be obvious to interchange the two polyolefins because they are similar in properties and commonly used for the same products. It would have been obvious to one having ordinary skill in the art at the time the invention was made to interchange polyethylene for polypropylene as the atactic and isotactic components, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. *In re Leshin*, 125 USPQ 416. The hot-melt adhesive is commercially available from the Huntsman Corporation under the trade name of RexFlex. It should be noted that hot-melt adhesives are in a liquefied state that the time of application due to the nature of the adhesive as required by claim 73.

Wang discloses some commonly known properties of isotactic and atactic polypropylene. For example, Wang teaches conventional crystalline polypropylene are high molecular weight polymers with a predominantly isotactic chain structure (column 2, lines 18-20) and, that due to the highly ordered crystalline nature of isotactic polypropylene, the degree of crystallinity is usually greater than 50%, as required by claim 76, with a melt flow rate ranging from 15-200 g/min (column 2, lines 30 - 35 and lines 40 - 42). On the other hand, amorphous or atactic polypropylene usually has a very low degree of crystallinity, around 4% or less as required by claim 75, with a heat of fusion of less than 10 J/g (the crystallinity is calculated by dividing the heat of fusion of the sample divided by the heat of fusion of the 100% crystalline polypropylene which is assumed to be 209 J/g - Johnson et al (US 2002/0010265, page 1, section 0012)). In

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addition, low molecular weight atactic or amorphous polypropylene is generally soft and has a melt flow rate of 2000g/10 min. RexFlex is known in the art as a relatively flexible polypropylene polymer that is at least about 30% atactic. It is preferred, however, that the majority of the polymer structure is crystalline. Examples of such relatively flexible polypropylene polymers include: RexFlex FPO W101 (commercially available from Huntsman Chemical Corporation (Kollma et al., US 2002/0098353 A1, page 3, sections 0028 and 0029).

Wang fails to teach the molecular weights as required by claim 70, the process temperature of the adhesive composition as required by claim 74 and the amounts of each polymer used in the blend as required by claim 77.

Hall, Jr. teaches a hot-melt adhesive blend comprising isotactic and atactic polypropylene (column 1, lines 46 - 50). The hot-melt adhesive composition is suitable to bond wood, paper, and textiles (column 1, lines, 35-36). The hot-melt adhesive composition taught by Hall, Jr., et al. preferably comprises a solid atactic polypropylene (essentially non-crystalline) having a molecular weight in the range of 15,000-60,000 and represents from 75-95 percent of the composition (column 1, lines 57 - 69 and column 2, lines 40 - 45). The isotactic (essentially crystalline) polypropylene component has a molecular weight ranging from 85,000 to 95,000 and represents from 5 - 25 percent of the composition (column 2, lines 19 - 25 and lines 39 - 45). Hall, Jr., et al. teaches for application to a surface, the adhesive is heated to a temperature in the range of 250°F to 365°F (column 2, lines 58 - 60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the hot-melt adhesive composition of Hall, Jr. et al. as the hot-melt

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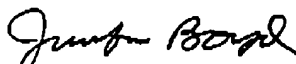
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composition as taught by Wang motivated by the desire to produce a high-performance, low-cost hot-melt adhesive with excellent properties specifically for use in textile bonding applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Jennifer Boyd
August 5, 2003

